

WHAT IS CLAIMED IS:

1. A heat resistant carburized rolling bearing component having an inner ring, an outer ring and a rolling element, formed of a steel material at least containing as alloy elements in a matrix, by mass %, at least 0.1% and at most 0.4% of C, at least 0.3% and at most 3.0% of Si, at least 0.2% and at most 2.0% of Mn, at most 0.03% of P, at most 0.03% of S, at least 0.3% and less than 2.5% of Cr, at least 0.1% and less than 2.0% of Ni, at most 0.050% of Al, at most 0.003% of Ti, at most 0.0015% of O and at most 0.025% of N and a remaining part of Fe and an unavoidable impurity, formed by carburizing or carbo-nitriding process followed by quenching, and after quenching, by tempering at a tempering temperature of at least 200°C and at most 350°C, said component having a surface hardness of at least HRC57 after said tempering process.
2. The heat resistant carburized rolling bearing component according to claim 1, wherein said steel material further contains at least one of at least 0.05% and at most 2.5% of Mo and at least 0.05% and at most 1.0% of V, both by mass %.
3. The heat resistant carburized rolling bearing component according to claim 1, wherein total content of Mn and Ni in said steel material is at least 1.5 mass %.
4. A method of manufacturing a heat resistant carburized rolling bearing component having an inner ring, an outer ring and a rolling element, comprising the steps of:
5 preparing a steel material at least containing as alloy elements, by mass %, at least 0.1% and at most 0.4% of C, at least 0.3% and at most 3.0% of Si, at least 0.2% and at most 2.0% of Mn, at most 0.03% of P, at most 0.03% of S, at least 0.3% and less than 2.5% of Cr, at least 0.1% and less than 2.0% of Ni, at most 0.050% of Al, at most 0.003% of Ti, at most 0.0015% of O and at most 0.025% of N and a remaining part of Fe and an unavoidable

10 impurity;

performing carburizing or carbo-nitriding process on said steel material followed by quenching; and

after said quenching, performing tempering process on said steel material at a temperature of at least 200°C and at most 350°C.

5. The method of manufacturing a heat resistant carburized rolling bearing according to claim 4, wherein said tempering process is performed after said quenched steel material is subjected to secondary quenching.

6. The method of manufacturing a heat resistant carburized rolling bearing component according to claim 5, wherein said secondary quenching is performed after said quenched steel material is subjected to intermediate annealing.

7. The method of manufacturing a heat resistant carburized rolling bearing component according to claim 6, wherein in said step of preparing the steel material, said steel material is prepared such that total content of Mn and Ni is at least 1.5 mass %.